

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the endoscope washing disinfection equipment which washes and disinfects an endoscope.

[0002]

[Description of the Prior Art] Generally, since it will be polluted once it is used, if an endoscope does not carry out washing disinfection after use, it has a possibility of causing a hospital infection. So, it is necessary to surely carry out washing disinfection of the endoscope after use. Usually, endoscope washing disinfection equipment is used, and an endoscope is washed and disinfected automatically.

[0003] By the way, endoscope washing disinfection equipment has the washing tub which installs the endoscope which it is going to wash and disinfect, and performs washing and disinfection of an endoscope within the washing tub. That is, the washing water which added the detergent to the tap water which received supply from the faucet of a waterworks through the feed pipe way washes an endoscope, and it rinses with tap water after this washing. Subsequently, it disinfects with the antibacterial which received supply from the disinfecting chamber, and rinses again with tap water after this disinfection.

[0004] Since it thinks also when saprophytic bacteria etc. are mixed in the tap water supplied from the faucet of a waterworks, the tap water after disinfecting through a water supply filter in the rinse process after disinfection especially is used (JP, 1-83245, A).

[0005]

[Problem(s) to be Solved by the Invention] If use is repeated, a water supply filter produces blinding and needs to exchange it periodically. For this reason, it is necessary to tell a user about that exchange stage in a certain form. Although there were some which were exchanged with the die length of the period which passes from the time of loading with a new disinfection filter conventionally, since frequency differed from the time amount for which equipment is used by the facilities of a hospital by this method greatly, it was difficult to tell a user correctly the proper stage when a water supply filter should be exchanged.

[0006] Then, more than [having been fixed] there was irrigation time amount until it collects on a washing tub through a feed pipe way from the faucet of a waterworks, when it became, equipment judged that the water supply filter carried out blinding, abnormalities were displayed on equipment, and exchange of a water supply filter was demanded from the user. That is, the situation of blinding was judged by the flow rate of the tap water supplied to a washing tub in this case.

[0007] However, since water supply conditions changed greatly with each facilities, although the thing "fixed time amount" became a rough standard, judging that the water supply filter was got blocked only with this had a problem in practice. That is, with the facility with many [water pressure / the water pressure of the feed pipe in a hospital is high, and] water supply amounts, even if two months have passed, for example and it started blinding with a remarkable water supply filter, while the abnormality display had not come out, in the facility where a feed water pressure is low from the first, even if the water supply filter had not carried out deer blinding only, it became insufficient [water supply amounts] with progress extent for two weeks, and the display of abnormalities had appeared in equipment.

[0008] This invention was made paying attention to the above-mentioned technical problem, and the place made into the purpose is to offer the endoscope washing disinfection equipment which can report a proper filter exchange stage to a user correctly while judging the blinding of a water supply filter correctly irrespective of the water supply conditions of a facility.

[0009]

[Means for Solving the Problem] In the endoscope washing disinfection equipment equipped with the filter from which the saprophytic bacteria under water supply are removed, this invention computes the standard of filter exchange with the value of water supply pressure, and when a water supply filter needs to be exchanged, it reports this to a user.

[0010]

[Embodiment of the Invention]

(1st operation gestalt) With reference to drawing 1 thru/or drawing 4 , the washing disinfection equipment for endoscopes concerning the 1st operation gestalt of this invention is explained.

[0011] Drawing 1 is the explanatory view showing the rough configuration of the whole endoscope washing disinfection equipment. Among this drawing, one is a washing tub and the endoscope 2 for washing / disinfection is installed into this washing tub 1. The diaphragm 4 of the ultrasonic vibrator 3 of a run undergarment mold is attached in the bottom surface part of the washing tub 1. By vibrating a diaphragm 4 with an ultrasonic vibrator 3, supersonic vibration is given to the washing liquid stored in the washing tub 1, and ultrasonic washing of the endoscope 2 immersed into the liquid is carried out. Furthermore, the column 5 which reduces the volume stored in the tub is established in the center section in the washing tub 1.

[0012] The liquid flow exhaust nozzle 7 and the circulation liquid suction opening 8 are formed in the washing tub 1. This liquid flow exhaust nozzle 7 and the circulation liquid suction opening 8 are connected through the duct 9 for liquid flow washing prepared in the body of equipment. In the middle of the duct 9 for liquid flow washing, the pump 10 for liquid flow washing is formed. And attract the washing liquid in the washing tub 1 from the circulation liquid suction opening 8 with the pump 10 for liquid flow washing, make this washing liquid into high pressure, and it is made to inject into the washing tub 1 from the liquid flow exhaust nozzle 7, and in the washing tub 1, a liquid flow is generated and the outside surface of an endoscope 2 is washed.

[0013] Furthermore, in the body of equipment, the duct 11 for washing in a scope duct is formed. The end of the duct 11 for washing in a scope duct is connected to the above-mentioned circulation liquid suction opening 8, and the other end of the duct 11 for washing in a scope duct is connected to the channel end connection 13 through the check valve 12. In the middle of the duct 11 for washing in a scope duct, the pump 14 for washing in a scope duct is formed. The Ayr supply line 18 which leads to a compressor 17 is connected to the duct part 15 which leads to the channel end connection 13 through the check valve 16. Moreover, the tube 19 for endoscope duct washing is connected to the channel end connection 13, and it connects with the channel regio oralis of the endoscope 2 in the washing tub 1, and the other end of this tube 19 sends in the compressed air from a compressor 17 in the channel of an endoscope 2 through the channel end connection 13 and a tube 19, and performs dewatering in that channel.

[0014] on the other hand -- the washing tub 1 -- the water supply opening 21 and the antibacterial inlet 22 are comparatively established in the upper part, and the effluent opening 23 is formed in the pars basilaris ossis occipitalis of the washing tub 1. The return duct 26 and the effluent duct 27 which lead to the antibacterial tank 25 through the duct change-over valve 24 are connected to the effluent opening 23. The duct change-over valve 24 is not switched to the condition of carrying out lock out cutoff of the effluent opening 23, the condition of returning the effluent opening 23 and making a duct 26 open for free passage, or the condition of making the effluent duct 27 opening the effluent opening 23 for free passage, and this switch is performed by the command from the control section which is not illustrated. The waste water disposal pump 28 is formed in the middle of the above-mentioned effluent duct 27, and the liquid in the washing tub 1 is discharged out of equipment by switching the duct change-over valve 24 to the effluent duct 27 side, and operating a waste water disposal pump 28.

[0015] The end of the antibacterial supply line 31 is connected to the pars basilaris ossis occipitalis of the antibacterial tank 25. The other end of the antibacterial supply line 31 is connected to the above-mentioned antibacterial inlet 22. The antibacterial perfusion pump 32 is formed in the middle of the antibacterial supply line 31.

[0016] On the other hand, the feed pipe way 35 is connected to the above-mentioned water supply opening 21. This feed pipe way 35 is connected to the faucet 37 of sources of water supply, such as a waterworks system, through the feed valve 36. In the middle of the feed pipe way 35, the water supply filter 38 for sterilization of specification inserts, and is prepared. The interior of the filter receipt room in the body of equipment is equipped with the water supply filter 38 free [attachment and detachment].

What can exchange only filter housing 38a to filter cartridge 38b is sufficient as the water supply filter 38.

[0017] Moreover, the filter ** switches 39 as a means to detect that it is located in a filter receipt room near the water supply filter 38, and the water supply filter 38 is set certainly, such as a limit switch, are formed. The filter ** switch 39 is also a means to detect the exchange, when exchanged for what has the new water supply filter 38.

[0018] The pressure sensor 41 which detects the water supply pressure in the feed pipe way 35 is formed in the part in the middle of the feed pipe way 35 located in a lower-stream-of-a-river (2nd order) side from the water supply filter 38. The signal detected with the pressure sensor 41 is calculated in the pressure control section 42, and the water-supply-pressure value in the feed pipe way 35 is computed. Furthermore, the pressure control section 42 has the operation part which carries out the comparison operation of the storage section which memorizes the pressure value immediately after water-supply filter exchange, and the water-supply-pressure value measured at the subsequent arbitration stage, compares the pressure value immediately after the water-supply filter exchange memorized beforehand with the newly measured pressure value, and when the difference becomes beyond the fixed value A, it outputs an alarm signal to an abnormality information means 43. The value A of differential pressure is defined according to the class of water supply filter 38 with which equipment is loaded. Moreover, a user may set the value as arbitration suitably.

[0019] The abnormality information means 43 reports abnormalities, when an alarm signal is received from the pressure control section 42. It is easy to be things, such as sound generating means, such as a loudspeaker, and a display means which can be viewed, as an abnormality information means 43. Moreover, not only according to a filter exchange stage but according to reduction of the pressure value which is drawing 4, and is measured so that the example may be shown, it is got blocked, and you may make it display the remaining use count and time amount to condition, i.e., a filter exchange stage, as an abnormality information means 43. That is, the abnormality information means 43 shown by drawing 4 (a) is an example which displays the remaining use count in a figure 45 until filter exchange is required. The abnormality information means 43 shown by drawing 4 (b) is an example which displays the remaining use count and time amount with the analog graduation 46 until filter exchange is required. The abnormality information means 43 shown by drawing 4 (c) is an example of filter blinding which displays (%) in the figure section 47 comparatively.

[0020] Next, an operation of washing and disinfection by endoscope washing disinfection equipment is explained. An endoscope 2 is first set to the washing tub 1, and the other end of the tube 19 for endoscope duct washing linked to the channel end connection 13 is connected to the channel entry of an endoscope 2. Then, the various actuation switches which are not illustrated are operated and washing disinfection equipment is operated. In connection with this, each process of washing, disinfection, a rinse, and a supplied air is performed as the following.

[0021] First, the following actuation is performed at the first washing process. The introduction feed valve 36 opens, washing water is led to the water supply opening 21 through the feed pipe way 35 and the water supply filter 38 from the faucet 37 of the source of water supply, and it supplies in the washing tub 1. Washing water is stored in the washing tub 1 after fixed time amount, and water supply will be suspended if the water level becomes fixed. From just before [this], the pump 10 for liquid flow washing and the pump 14 for washing in a scope duct begin to move, and liquid flow washing and washing in a channel are started. That is, high-pressure washing water is injected into the washing tub 1 from the liquid flow exhaust nozzle 7, in the washing tub 1, a liquid flow is generated and the outside surface of an endoscope 2 is washed. At this washing process, the big dirt adhering to an endoscope 2, soft dirt, light dirt, etc. are washed.

[0022] Ultrasonic washing will be performed if the process time amount of liquid flow washing set up beforehand passes. The hard dirt adhering to an endoscope 2, the dirt of the complicated configuration section, etc. are powerfully dropped to this ultrasonic washing. Termination of this ultrasonic washing process performs washing by the liquid flow again. The dirt which swells up by ultrasonic washing and was separating from an endoscope 2 is dropped to this process.

[0023] After a washing process is completed, a waste water disposal pump 28 operates at the same time it switches the duct change-over valve 24 to an effluent side, and the washing liquid in the washing tub 1 is discharged to the exterior through the effluent duct 27. Then, while opening a feed valve 36 and supplying new water in the washing tub 1 through the feed pipe way 35 and the water supply filter 38 again, the pump 10 for liquid flow washing and the pump 14 for washing in a scope duct operate, and an endoscope 2 is rinsed by the water supply in a liquid flow and a channel.

[0024] While suspending the pump 12 for washing in a scope duct in the second half of this rinse process, a compressor 17 is operated, Air is sent in into the various channels of an endoscope 2 through the channel end connection 13, and the ridge in that channel is performed.

[0025] After a rinse process is completed, a disinfection process is performed continuously. At this disinfection process, the antibacterial first contained in the antibacterial tank 25 is supplied in the washing tub 1 from the antibacterial inlet 22 through the antibacterial supply line 31 by operating a perfusion pump 32. And while making the endoscope 2 whole completely immersed into the antibacterial collected in the washing tub 1, it disinfects by supplying some antibacterials in the washing tub 1 in the channel of an endoscope 2 through the channel end connection 13 and the tube 19 for endoscope duct washing by ON actuation of the pump 14 for washing in a scope duct. And if predetermined time passes, the duct change-over valve 24 will change to an antibacterial recovery side, and the antibacterials in the washing tub 1 will be collected in the antibacterial tank 25.

[0026] A rinse process is again performed after termination of a disinfection process. That is, while a feed valve 36 opens and supplying new water in the washing tub 1 through the feed pipe way 35 and the water supply filter 38, the pump 10 for liquid flow washing and the pump 14 for washing in a scope duct are operated, and the water supply in a liquid flow and a channel performs an internal and external rinse of an endoscope 2. Then, a compressor 17 is operated and the ridge in the channel of an endoscope 2 is performed. Furthermore, a waste water disposal pump 28 is suspended after fixed time amount progress.

[0027] On the other hand, although the water supply filter 38 will produce blinding and will need to exchange it someday if use is repeated, the procedure in this case is explained with reference to drawing 2 and drawing 3 below. First, the pressure value of the feed pipe way 35 immediately after it is exchanged and the water supply filter 38 becomes new is measured, and it is the early pressure value P_0 about this pressure value. It carries out and this data is electrically memorized in the storage section of the pressure control section 42 (step S1). In addition, the filter ** switch 39 performs detection of having been exchanged in the water supply filter 38. That is, once the contact of this switch 39 opens, when closed again, it is judged as that to which filter exchange was performed. Moreover, it checks that the user has exchanged the water supply filter 38, the carbon button of a control panel etc. is pushed, and you may make it initial value change by that cause.

[0028] They are the pressure value P_1 of the feed pipe way 35, P_2 , and P_3 , --, P_n to the stage of the arbitration in a water supply process after that. It is made to measure (step S2). And one month passes, for example and it is the pressure value P_n at this time. When a difference with the initial value P_0 immediately after exchange becomes beyond the fixed value A, it judges that it is unusual (step S3), and a user is told about being the exchange stage of a filter with the abnormality information means 43 (step S4). Moreover, this and coincidence are made to suspend equipment. And the water supply filter 38 is exchanged for a new thing (step S5).

[0029] In addition, if the remaining count of usable and the remaining available time to plugging condition, i.e., a filter exchange stage, are displayed according to reduction of the pressure value measured as are mentioned above as an abnormality information means 43, and not only the information of a filter exchange stage but drawing 4 showed the example, a filter exchange stage can be announced beforehand to a user, and a user can prepare filter exchange.

[0030] On the other hand, drawing 3 shows the example value of the difference of the concrete numeric value, and a numeric value and an initial-pressure value of the pressure value measured weekly. Initial-pressure value P_0 of the feed pipe way 35 immediately after exchanging for what has the new water supply filter 38 It is the value of 2.3 kg/cm² and the fixed allowable pressure difference A 0.5 kg/cm² If

it carries out The initial-pressure values of the feed pipe way 35 measured after four weeks are 1.8 kg/cm². It becomes and is $P_n - P_o$. It becomes 0.5 kg/cm², the value of the allowable pressure difference A is exceeded, the lack of water supply amounts by plugging of the water supply filter 38 is caused, and plugging information is performed at this time.

[0031] When the initial-pressure value has been recognized like the above according to the 1st operation gestalt, if the pressure of the feed pipe way 35 measured at the stage of arbitration decreases more than fixed, it will be judged as the blinding of the pressure water supply filter 38, and this abnormality will be reported to a user. It is exchangeable for the new water supply filter 38 irrespective of the water supply conditions and service condition of a facility with it at a proper (correctly) exchange stage.

[0032] (2nd operation gestalt) The 2nd operation gestalt of this invention is explained with reference to drawing 5. This 2nd operation gestalt is the modification of the thing of the 1st operation gestalt mentioned above. That is, water supply time amount until the washing tub 1 fills with the water supply is measured it not only measures the pressure under water supply, but, and it is the initial water-supply-pressure value P_o immediately after exchange of the water supply filter 38. The water supply time amount t is fixed time amount B_{min} then, without reporting as abnormalities immediately, even when it receives and becomes beyond the fixed difference A. Distinction about whether it exceeds or not is performed (step S4). And the water supply time amount t is fixed time amount B_{min} . When it becomes above, this is reported to a user as abnormalities for the first time (step S5). And the water supply filter 38 is exchanged for a new thing (step S6).

[0033] Generally, even when blinding was started, saprophytic bacteria did not necessarily pass through the water supply filter 38, and the expiration date was not necessarily decided. That is, it is usable even if there is much blinding somewhat, when it is a facility with many [conditions / water supply conditions are good and] flow rates obtained.

[0034] Even if it was the case where a water-supply-pressure value became [in addition to detection of water supply pressure / in the factor of water supply time amount] more than fixed in addition to decision, the thing of this operation gestalt reported this as abnormalities, only when the water supply time amount of the washing water to the washing tub 1 became more than fixed. When water supply time amount is the conditions which end comparatively short, use of the water supply filter 38 is possible, and at this time, duration of service of the water supply filter 38 can be lengthened by not reporting. That is, since it reports that it is a filter exchange stage when the effectiveness of equipment worsens by extension of water supply time amount, the water supply filter 38 can be used effective (long period of time) in the maximum.

[0035] (3rd operation gestalt) The 3rd operation gestalt of this invention is explained with reference to drawing 6. This 3rd operation gestalt detects abnormalities, such as that the faucet 37 of the source of water supply is closed further, and a leak in the middle of the feed pipe way 38, in the thing of the 1st operation gestalt mentioned above with the water-supply-pressure value detected with the pressure sensor 41 in the case of activity initiation of that day.

[0036] That is, the pressure of the feed pipe way 38 is measured at the time of process initiation (step S1), an intense leak judges that the faucet 37 is closed when this initial water supply pressure P_a is close to zero (step S2), and this added system reports to a user as abnormalities (step S3). Moreover, rather than water-supply-pressure P_{n-1} in the last water supply process, when the pressure of the feed pipe way 38 is measured in a water supply process (step S4) and water supply pressure P_n has fallen little by little, when a pressure is low, it judges that the leak has occurred all over the feed pipe way 35 (step S5), and the abnormality is reported to a user for a while, (step S6). Since the deduction of this water supply pressure is far larger than the deduction of the pressure by the blinding of the usual water supply filter 38, it is distinguishable.

[0037] Since it turns out immediately that a faucet 37 is closed etc. according to this operation gestalt, generating of idling/failure of a pump etc. can be prevented. Since the pump was operated before water supply was completed completely conventionally, generating of idling/failure of a pump etc. had been caused. Moreover, while being able to shorten the time amount to redo of actuation, the leak of the feed pipe way 35 can also be discovered at an early stage.

[0038] The exchange stage of the same water supply filter 38 as the case of the operation gestalt mentioned above is detected after this.

(4th operation gestalt) The 4th operation gestalt of this invention is explained with reference to drawing 7 and drawing 8. With this operation gestalt, it is located in the parts of the upstream of the water supply filter 38, and the downstream in the feed pipe way 35, and the pressure sensors 41a and 41b are formed, respectively. And the pressure value P1 detected with each pressure sensors 41a and 41b during water supply and P2 When a difference becomes larger than the fixed value C, the water supply filter 38 judges it as what started blinding, and it is made to report to a user.

[0039] Thus, it is the water-supply-pressure value P1 of the both sides of the water supply filter 38, and P2 by two pressure sensors 41a and 41b formed in each location of the both sides of the water supply filter 38. It measures and the abnormalities of the water supply filter 38 are judged according to these differences. That is, it is not necessary to compare with the water supply pressure immediately after exchange of the water supply filter 38. For this reason, the limit switch and pressure storage means for measuring the pressure value immediately after exchange are unnecessary. Moreover, compared with the case where measure the pressure value immediately after exchange and comparison distinction is carried out with it, accuracy understands pressure drawdown more.

[0040] (5th operation gestalt) The 5th operation gestalt of this invention is explained with reference to drawing 9. Assignment time amount Bmin to which the water supply time amount t to the washing tub 1 is set with equipment in the exchange early stages of the water supply filter 38 in this operation gestalt. Even if it is the above case, when [with little plugging of the water supply filter 38] there is little pressure drawdown, the "water supply time amount Bmin until it takes out abnormalities" beforehand set up with equipment is rewritten to a longer value.

[0041] For example, when the washing tub 1 was not filled to the brim with water in 3 minutes, the water supply amounts by plugging etc. of the water supply filter 38 are insufficient, and he was trying to report abnormalities conventionally. However, when there are few water supply amounts of a facility from the first (for example, it will take 2 minutes and 50 seconds the first stage also), the assignment time amount of these 3 minutes will be exceeded also only by getting saprophytic bacteria blocked slightly in the water supply filter 38. It is this thing that changes 3 minutes automatically at 3 minutes and 10 seconds in such a case. In addition, the maximum time amount which can be extended is set up, and if it rewrites beyond the maximum time amount and is made impossible, superfluous time amount extension can be prevented.

[0042] If this operation gestalt is processed, although that water supply time amount tends to come out of abnormalities by the ***** in the facility where water supply conditions are bad by time amount until water is supplied to the blinding of a water supply filter by the washing tub 1 at least in the case where there are few water supply amounts becoming long, and the usable water supply filter has not carried out blinding, what reports as abnormalities is lost. This is applicable to the thing of the operation gestalt mentioned above.

[0043] (6th operation gestalt) The 6th operation gestalt of this invention is explained with reference to drawing 10. With this operation gestalt, the duct 9 for liquid flow washing which leads to the circulation liquid suction opening 8 through the motor bulb 51 for a change in the middle of the feed pipe way 35 is connected in the thing of the 1st operation gestalt mentioned above (see drawing 10 (a)). In this case, from the motor bulb 51 of the feed pipe way 35, the part of the downstream serves as a part of duct 9 for liquid flow washing, and the pump 53 is formed in this part. Moreover, the water supply opening 21 serves as the liquid flow exhaust nozzle 7.

[0044] So, in supplying water to the washing tub 1 in washing water from the faucet 37 of the source of water supply, it switches the motor bulb 51 to a water supply side like the arrow head shown by drawing 10 (b). Moreover, the duct 9 side for liquid flow washing which leads to the circulation liquid suction opening 8 intercepts. And a feed valve 36 is opened and water is supplied by operating a pump 53. At this time, the water-absorbing power of a pump 53 will add and supply water to water supply pressure. Since a pump 53 is also for liquid flow washing, the suction pressure is quite strong. This suction pressure joins the water supply filter 38. That is, both the water supply pressure and the suction pressure

of a pump 53 from the source of water absorption join the water supply filter 38, and, for this reason, the filter penetrability force improves sharply.

[0045] And the filtration capacity of the water supply filter 38 is heightened, and the life of the water supply filter 38 is extended substantially. Moreover, water supply capacity is heightened and water supply time amount is shortened. Since blinding was started to very short time amount in the facility where especially waterworks water pressure is low and the running cost of the water supply filter 38 increased, it had become a problem, but according to this method, while heightening the filtration capacity of the water supply filter 38, the water supply amounts in short time amount can fully be secured, and the life of the water supply filter 38 can be prolonged.

[0046] In addition, it is also possible for a pressure sensor 41 to detect water supply pressure, and to detect the blinding of the water supply filter 38 by principle which was mentioned above during this water supply. When carrying out liquid flow washing of the endoscope installed in the washing tub 1, while, making the downstream part of the feed pipe way 35 open for free passage the duct 9 for liquid flow washing which leads to the circulation liquid suction opening 8 like the arrow head shown by drawing 10 (c) on the other hand, the source side of water supply is intercepted. Then, it becomes high pressure and injects into the washing tub 1 from the liquid flow exhaust nozzle 7, and in the washing tub 1, the washing water drawn from the circulation liquid suction opening 8 through the duct 9 for liquid flow washing generates a liquid flow, and washes an endoscope.

[0047] Moreover, when an antibacterial is in the washing tub 1, similarly the liquid flow disinfection by the antibacterial is possible, an antibacterial can flow into the part of the feed pipe way 35 which served as the duct 9 for liquid flow washing further, i.e., the part by the side of the lower stream of a river (2nd order) of the water supply filter 38, and the pipeline system can be disinfected automatically.

[0048] In addition, the downstream can be broadly disinfected, so that the part which connects to the feed pipe way 35 the duct 9 for liquid flow washing which leads to the circulation liquid suction opening 8, and the part of the motor bulb 51 are prepared near the water supply filter 38.

[0049] (7th operation gestalt) With reference to drawing 11, the endoscope washing disinfection equipment concerning the 7th operation gestalt of this invention is explained.

[0050] Among drawing 11 (a), it is the body of equipment of the washing disinfection equipment concerning this operation gestalt, and the filter receipt room 61 is formed, and into this filter receipt room 61, 60 contain the water supply filter 38 and load the body 60 of equipment with it. As drawing 11 (b) shows, the water supply filter 38 loads with filter cartridge 38b into filter housing 38a. Cap 38c is prepared in filter housing 38a, and it has the structure where only filter cartridge 38b is exchangeable, by opening this cap 38c. Two tube connection regio oralis 38d and 38e is formed in cap 38c.

[0051] The tube connection regio oralis 38d and 38e prepared in cap 38c of the above-mentioned water supply filter 38 is formed in the mouthpieces 62a and 62b with which it can equip by one-touch at the filter receipt room 61. and the tube 62 which forms the feed pipe way 35 leads to the filter receipt room 61 -- having -- **** -- the middle -- separating -- the above -- it connects with Mouthpieces 62a and 62b.

[0052] Although the filter receipt room 61 in drawing 11 (a) is the structure of loading by turning the water supply filter 38 sideways, the filter receipt room 61 in drawing 11 (b) is the thing of structure which loads by making the water supply filter 38 into length.

[0053] moreover, in not loading the filter receipt room 61 with the water supply filter 38, drawing 11 (d) shows -- as -- the communication trunk 63 of the shape of a character of U -- the above -- it is made to make Mouthpieces 62a and 62b open for free passage

[0054] According to the above-mentioned configuration, they are cancelable, although it is troublesome, and structure is complicated, and is cost quantity and turning the housing lower part and removing from the upper part etc. had a fault, such as taking a tooth space too much, when a water supply filter was exchanged conventionally.

[0055] In addition, this invention is not limited to the thing of the operation gestalt mentioned above. For example, a water supply filter may be the case where it prepares in the special feed pipe way which performs water supply which the case where it prepares in the feed pipe way which leads to the feed

water tank installed not only when preparing in the feed pipe way leading to the external source of water supply, but in the body of equipment is sufficient as, and is especially used for rinse washing after disinfection.

[0056] According to the explanation mentioned above, the following matters are acquired. Moreover, the combination of the arbitration of each matter is also possible.

[Additional remark]

1. Endoscope washing disinfection equipment characterized by detecting blinding of filter with value of water supply pressure, and reporting exchange stage of filter in endoscope washing disinfection equipment equipped with filter from which saprophytic bacteria under water supply are removed.

[0057] 2. In Endoscope Washing Disinfection Equipment Equipped with Filter from which Saprophytic Bacteria under Water Supply are Removed A pressure detection means by which the sensor which detects water supply pressure was formed in the secondary [at least] the feed pipe way in which the filter was prepared side (outlet), A means to memorize the value of the water supply pressure measured with the above-mentioned pressure detection means immediately after filter exchange, Endoscope washing disinfection equipment characterized by providing the means which carries out the comparison operation of the pressure value just behind the above-mentioned philharmonic *****, and the value of the water supply pressure in a water supply process, and a means to report the exchange stage of the above-mentioned filter when the difference of the two above-mentioned pressure values becomes more than fixed.

[0058] 3. Endoscope washing disinfection equipment given in the 2nd term to which storage-of-water time amount of washing tub is characterized by reporting exchange stage of filter to ***** case more than fixed when difference of two above-mentioned pressure values becomes more than fixed.

[0059] 4. Endoscope washing disinfection equipment given in the 2nd term which difference of pressure value of above-mentioned filter is below constant value, and is characterized by thing of above-mentioned storage-of-water time amount for which proper installation constant value is changed automatically beforehand when storage-of-water time amount to washing tub becomes beyond the set point.

[0060] 5. Endoscope washing disinfection equipment given in the 1st term characterized by reporting exchange stage of filter when difference of water-supply-pressure value measured with those pressure detection means becomes more than fixed, while forming pressure detection means in each by the side of [the water supply filter in a feed pipe way / primary] and and secondary (inlet port) (outlet).

[0061] 6. Endoscope washing disinfection equipment characterized by operating above-mentioned washing pump in a part of water supply process at least while connecting sink opening of washing pump inside equipment to secondary water supply filter side (outlet) at least.

[0062] 7. Endoscope washing disinfection equipment characterized by the ability to remove filter from every housing and body of equipment in endoscope washing disinfection equipment equipped with water supply filter from which saprophytic bacteria under water supply are removed.

[0063]

[Effect of the Invention] As explained above, while judging the blinding of a water supply filter correctly irrespective of the water supply conditions of a facility according to this invention, a proper exchange stage can be correctly reported to a user.